CLAIMS

What is claimed is:

1. A method for managing a memory system having a plurality of subsystems, comprising the steps of:

upon accessing the subsystems for a piece of data used by a first process,

determining the access time to acquire the piece of data in the memory system;

comparing the determined access time to a threshold; and

taking an action based on the results of the comparing step;

wherein accessing the subsystems is in a non-sequential order.

2. The method of claim 1 wherein data blocks containing the piece of data is placed in the memory system based on information selected in one or a combination of:

a movement pattern of data in a data block,

a structure of the memory system, and

a cache-level architecture in the memory system.

3. The method of claim 1 further comprising the steps of:

using a memory table having entries pointing to data blocks storing data for at least one subsystem; and

using the entries to locate the access data.

4. The method of claim 3 wherein the memory table working with a memory manager managing the data blocks independent of an operating system working with the memory system and independent of a processor working with the memory system.

5. The method of claim 1 further comprising the steps of:

using a memory table having entries pointing to data blocks storing data for the memory system; and

the memory table using a physical address of a memory page corresponding to the piece of access data to convert to a location address corresponding to an entry pointing to the location of the piece of access data.

6. A method for managing a memory system, comprising the steps of:

upon accessing the memory system for a piece of data used by a first process,

a processor working with the memory system continuing its functions until it is stalled;

comparing the time taken to complete the memory access to a threshold; and

if the time taken to complete the memory access is close to, equal to, or greater than the threshold, then taking an action.

7. The method of claim 6 wherein the action is selected in one or a combination of

postponing executing the first process and allowing executing a second process;

causing the first process to be switched to a second process; and

causing a performance monitor on the memory system or on a system using the memory subsystem.

8. The method of claim 6 further comprising the step of polling a latency manager for the time taken to complete the memory access; the latency manger being part of managing the memory system.

9. The method of claim 6 further comprising the steps of:

using a memory table having entries pointing to data blocks storing data for at least one subsystem; and

using the entries to locate the access data.

10. The method of claim 9 wherein the memory table working with a memory manager managing the data blocks independent of a processor working with the memory system and independent of an operating system working with the memory system.

11. A method for managing a memory system, comprising the steps of:

upon accessing the memory system for a piece of data used by a first process

counting a time elapsed from the time the data access starts; the counted time being increased as the data is being accessed;

comparing the counted time to a threshold; and

if the counted time is close to, equal to, or greater than the threshold, then taking an action selected in one or a combination of

postponing executing the first process and allowing executing a second process;

causing the first process to be switched to a second process; and

causing a performance monitor on the memory system or on a system using the memory system.

12. The method of claim 11 further comprising the steps of:

using a memory table having entries pointing to data blocks storing data for at least one memory subsystem; and

using the entries to locate the access data.

13. A computer-readable medium embodying instructions for a computer to perform a method for managing a memory system having a plurality of subsystems, the method comprising the steps of:

upon accessing the subsystems for a piece of data used by a first process,

determining the access time to acquire the piece of data in the memory system;

comparing the determined access time to a threshold; and

taking an action based on the results of the comparing step;

wherein accessing the subsystems is in a non-sequential order.

14. The computer-readable medium of claim 13 wherein data blocks containing the piece of data is placed in the memory system based on information selected in one or a combination of:

a movement pattern of data in a data block,

a structure of the memory system, and

a cache-level architecture in the memory system.

15. The computer-readable medium of claim 13 wherein the method further comprising the steps of:

using a memory table having entries pointing to data blocks storing data for at least one subsystem; and

using the entries to locate the access data.

16. The computer-readable medium of claim 15 wherein the memory table working with a memory manager managing the data blocks independent of an operating

system working with the memory system and independent of a processor working with the memory system.

17. The computer-readable medium of claim 13 wherein the method further comprises the steps of:

using a memory table having entries pointing to data blocks storing data for the memory system; and

the memory table using a physical address of a memory page corresponding to the piece of access data to convert to a location address corresponding to an entry pointing to the location of the piece of access data.

18. A computer-readable medium embodying instructions for a computer to perform a method for managing a memory system, the method comprising the steps of:

upon accessing the memory system for a piece of data used by a first process,

a processor working with the memory system continuing its functions until it is stalled;

comparing the time taken to complete the memory access to a threshold; and

if the time taken to complete the memory access is close to, equal to, or greater than the threshold, then taking an action.

19. The computer-readable medium of claim 18 wherein the method further comprises the step of polling a latency manager for the time taken to complete the memory access; the latency manger being part of managing the memory system.

20. The computer-readable medium of claim 18 wherein the method further comprises the steps of:

using a memory table having entries pointing to data blocks storing data for at least one subsystem; and

using the entries to locate the access data.

21. A computer-readable medium embodying instructions for a computer to perform a method for managing a memory system, the method comprising the steps of:

upon accessing the memory system for a piece of data used by a first process,

counting a time elapsed from the time the data access starts; the counted time being increased as the data is being accessed;

comparing the counted time to a threshold, and

if the counted time is close to, equal to, or greater than the threshold, then taking an action selected in one or a combination of

postponing executing the first process and allowing executing a second process;

causing the first process to be switched to a second process; and

causing a performance monitor on the memory system or on a system using the memory subsystem.

22. The computer-readable medium of claim 21 wherein the method further comprises the steps of:

using a memory table having entries pointing to data blocks storing data for at least one memory subsystem; and

using the entries to locate the access data.

23. An apparatus for managing a memory system having a plurality of subsystems, comprising:

means for, upon accessing the subsystems for a piece of data used by a first process,

determining the access time to acquire the piece of data in the memory system;

comparing the determined access time to a threshold; and

taking an action based on the results of the comparing step;

wherein accessing the subsystems is in a non-sequential order.

24. The apparatus of claim 23 wherein data blocks containing the piece of data is placed in the memory system based on information selected in one or a combination of:

a movement pattern of data in a data block,

a structure of the memory system, and

a cache-level architecture in the memory system.

25. The apparatus of claim 23 further comprising a memory table having entries pointing to data blocks storing data for at least one subsystem; the entries being used to locate the access data.

26. The apparatus of claim 25 wherein the memory table working with a memory manager managing the data blocks independent of an operating system working with the memory system and independent of a processor working with the memory system.

27. The apparatus of claim 23 further comprising a memory table having entries pointing to data blocks storing data for the memory system; the memory table

using a physical address of a memory page corresponding to the piece of access data to convert to a location address corresponding to an entry pointing to the location of the piece of access data.

28. An apparatus for managing a memory system, comprising:

upon accessing the memory system for a piece of data used by a first process,

a processor for working with the memory system and for continuing its functions until it is stalled;

means for comparing the time taken to complete the memory access to a threshold; and

means for taking an action if the time taken to complete the memory access is close to, equal to, or greater than the threshold.

29. The apparatus of claim 28 further comprising means for polling a latency manager for the time taken to complete the memory access; the latency manger being part of managing the memory system.

30. The apparatus of claim 28 further comprising a memory table having entries pointing to data blocks storing data for at least one subsystem; the entries being used to locate the access data.

31. An apparatus for managing a memory system, comprising:

upon accessing the memory system for a piece of data used by a first process,

means for counting a time elapsed from the time the data access starts; the counted time being increased as the data is being accessed;

means for comparing the counted time to a threshold, and if the counted time is close to, equal to, or greater than the threshold, means for taking an action selected in one or a combination of

postponing executing the first process and allowing executing a second process;

causing the first process to be switched to a second process; and

causing a performance monitor on the memory system or on a system using the memory subsystem.

32. The apparatus of claim 31 further comprising a memory table having entries pointing to data blocks storing data for at least one memory subsystem; the entries being used to locate the access data.